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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,873	06/28/2006	Yuji Hiroshige	59584US004	1755
32692	7590	12/12/2008		
3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427				
EXAMINER				
REDDY, KARUNA P				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
12/12/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/596,873

**Applicant(s)**

HIROSHIGE ET AL.

**Examiner**

KARUNA P. REDDY

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 October 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) 4-6 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3, 7 and 8 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/CIS)  
Paper No(s)/Mail Date 10/17/2008  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to amendment filed 10/17/2008. Claims 1 and 7 are amended; and claims 4-6 are withdrawn from consideration as being drawn to non-elected invention. Accordingly, claims 1-8 are currently pending in the application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 112***

3. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 7 recites "phosphorus content greater than 0% and not greater than 5.2% by weight of the (meth)acrylic polymer." While there is support for the recited phosphorus content in (meth)acrylic polymer used to form a thermally conductive sheet containing 45, 50 and 60 parts by volume of hydrated compound, there is no support for such a (meth)acrylic copolymer in a thermally conductive sheet, of present claims, comprising broad range i.e. 40 to 90 vol% of hydrated metal compound.

#### ***Claim Rejections - 35 USC § 103***

4. Claims 1-3 and 7-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al (JP 2000-313785).

Yamazaki et al disclose a resin composition for fire-resistant molding materials suitably used as a sheet (paragraph 0001). The flame retardant molding material comprises a radically polymerizable resin containing aluminum hydroxide and phosphoric ester methacrylate, wherein the phosphorus content in the radical polymerizable resin is 0.7-10 wt% to overall radical polymerizable resin (paragraph 0007). Other compounds that are copolymerizable with phosphoric ester methacrylate can be included (paragraph 0023). Examples of copolymerizable monomers include styrene, methyl (meth)acrylate, ethyl (meth)acrylate (paragraph 0025). The phosphoric ester (meth)acrylate is present in 5-80% by weight of the resin and it is desirable that the other copolymerizable monomer is present in an amount of 20-95% by weight. It is desirable to use 100-300 parts by weight of aluminum hydroxide to 100 parts of the resin (paragraph 0028) and reads on the vol% of metal hydroxide of claim 1. Furthermore, when the aluminum hydroxide content is more than 300 parts by weight relative to 100 parts by weight of radically polymerizable resin, molding performance properties such as flexibility may be poor i.e., Yamazaki et al recognize the importance of flexibility accorded to molded products (paragraph 0028). The fire retardant molding composition of the present invention is suitable for materials for moldings requiring good fire resistance such as sheets (paragraph 0034). See example 1, where in the product is compounded with mono(2-methacryloyloxyethyl) acid phosphate and di(2-methacryloyloxy) acid phosphate to obtain a radical polymerizable resin.

Yamazaki et al fails to specifically identify a flame retardant flexible sheet comprising the organophosphorus compound not substantially copolymerizable with a

(meth)acrylic monomer, use of the resin composition as a thermally conductive flexible sheet and high flame/fire-retardancy associated with it.

However, Yamazaki et al in the general disclosure teach that for further enhanced fire retardance of molded products, the fire retardant molding resin composition may be compounded with fire retardants. Any fire retardants commonly used for fire retardant molding resin may be used and include halogen free retardants such as phosphoric acid esters exemplified by triphenyl phosphate, cresyl dipheyl phosphate and resorcinol diphenyl phosphate (paragraph 0032). Therefore, it would have been obvious to one skilled in the art at the time of invention to add phosphoric acid ester fire retardants, such as triphenyl phosphate, cresyl dipheyl phosphate and resorcinol diphenyl phosphate, not substantially copolymerizable with a (meth)acrylic monomer, to the composition used to form flame retardant sheets because Yamazaki et al contemplate adding other fire retardants for further enhanced fire retardance and one of ordinary skill in the art wanting to enhance the fire retardance further would add such a fire retardant to the molding composition used to form the flame retardant sheets, motivated by expectation of success.

With respect to use of the resin composition as a thermally conductive flexible sheet and high flame/fire-retardancy associated with it, in light of the fact that prior art teaches / discloses essentially the same composition as that of the claimed and is useful for molding into a fire retardant sheet which is flexible, one of ordinary skill in the art would have a reasonable basis to believe that the flame retardant sheet formed using the composition of prior art exhibits essentially the same properties i.e. would be thermally conductive. Since PTO cannot conduct experiments, the burden of proof is

shifted to the applicants to establish an unobviousness difference. See *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

Even if properties of the flexible flame retardant sheet of instant claims and examples of Yamazaki et al are not the same, it would still have been obvious to one of ordinary skill in the art to make flame retardant sheet having the claimed properties because it appears that the references generically embrace the claimed flame retardant sheet and the person of ordinary skill in the art would have expected all embodiments of the reference to work. Applicants have not demonstrated that the differences, if any, between the claimed flexible flame retardant sheet and the flame retardant sheet of prior art give rise to unexpected results.

### ***Response to Arguments***

5. Applicant's arguments, filed 10/7/2008, with respect to rejection of claims 1-3 and 7-8 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement have been fully considered and are persuasive. The rejection of claims 1-3 and 7-8 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn in view of the amendment.
6. Applicant's arguments, filed 10/7/2008, with respect to claims 1-3 and 7-8 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamazaki et al (JP 2000-313785) have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

7. Applicant's arguments, filed 10/7/2008, have been fully considered but they are not persuasive. Specifically, applicant argues that (A) claim 1, as amended, expressly claims that the sheet comprises an organophosphorus compound (emphasis added by applicant), i.e. a separate chemical entity from (meth)acrylic polymer; and (B) Yamazaki et al do not suggest or teach the claimed combination of a (meth)acrylic polymer, a halogen-free flame retardant selected from the group consisting of an organophosphorus compound not substantially copolymerizable with a (meth)acrylic monomer, a triazine skeleton-containing compound, an expanded graphite and polyphenylene ether (emphasis added by examiner), and a hydrated metal compound.

With respect to (A), applicant's attention is drawn to the new grounds of rejection in paragraph 4 above, necessitated by the amended to claim 1 to include a halogen free flame retardant which is an organophosphorus compound not substantially copolymerizable with a (meth)acrylic monomer.

With respect to (B), while the claimed combination of (meth)acrylic polymer, organophosphorus compound not substantially copolymerizable with a (meth)acrylic monomer and hydrated metal compound are taught by Yamazaki et al, other halogen-free flame retardant (a triazine skeleton-containing compound, an expanded graphite and polyphenylene ether) are drawn to non-elected invention.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Art Unit: 1796

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800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
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